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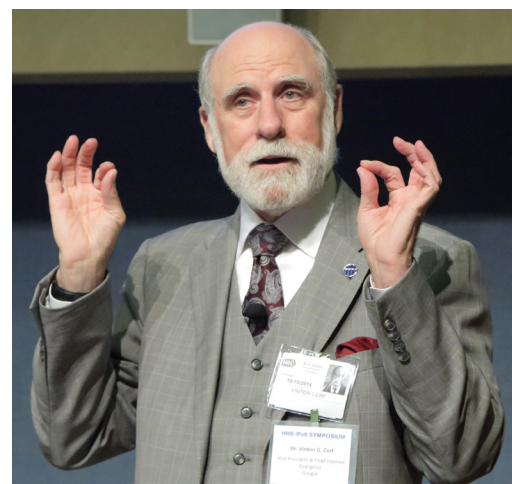
nih record

Internet Founder Invites World to New Version of Net

By Rich McManus

Almost 20 years ago, one of the fathers of the Internet, Dr. Vint Cerf, and colleagues built a new version of the Internet, complete with HOV lanes, E-ZPass access and sprawling exurbs of new IP (Internet protocol) addresses. But so far, very few people have taken advantage, even though your iPhone, your tablet, your Mac and most likely your PC are set up to handle what's known as IPv6, or Internet protocol version 6.

Recently, in NLM's Lister Hill Amphitheater, Cerf, an avuncular, irreverent figure with a Sigmund Freud beard, wondered aloud about why only 3 percent of the world is using a fast-lane Internet that has been around since 1996. His talk opened a daylong HHS symposium on IPv6, including how it is being implemented across federal government.



Dr. Vint Cerf speaks at recent NLM conference.

SEE CERF, PAGE 6



NCI's Dr. Kiyohiko Mabuchi

Disaster Medicine Assessing Health Effects of Japan's Quake, Tsunami, Nuclear Accident

By Dana Talesnik

Nearly 4 years ago, a three-part disaster ravaged Japan. On Mar. 11, 2011, a 9.0-magnitude earthquake caused widespread damage and triggered a series of tsunamis and a nuclear accident. The earthquake, the largest to hit Japan in modern times, occurred 230 miles northeast of Tokyo, off the coast of Honshu. The subsequent tsunamis devastated coastal areas, particularly in the Tohoku region, and sparked a meltdown at the Fukushima Dai-ichi Nuclear Power Plant, the largest nuclear accident since Chernobyl. The earthquake and tsunami killed more than 15,000 people and injured thousands more.

Within days of this catastrophe, NIH inves-

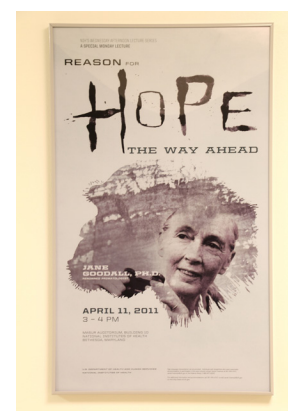
SEE JAPAN, PAGE 4

Poster Exhibit in Bldg. 1 Showcases NIH Contributions to Medicine

Visitors to Bldg. 1 will now encounter a new exhibition of posters that highlight some of NIH's significant contributions to medical science.

Located on the second and third floors of Bldg. 1, the exhibit features 45 posters. Some were contributed by NIH institutes and centers while others are on loan from the Office of NIH History's DeWitt Stetten Jr. Museum of Medical Research.

Last spring, NIH deputy director for science, outreach and policy Dr. Kathy Hudson asked Dr. Kim Pelis of OD's Office of Communica-



Sample Bldg. 1 poster

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NIH Record Office Bldg. 31, Rm. 5B41
Phone (301) 496-2125 Fax (301) 402-1485

Web address <http://nihrecord.nih.gov/>

Editor
Richard McManus
Rich.McManus@nih.gov

Associate Editor
Carla Garnett
Carla.Garnett@nih.gov

Staff Writers
Eric Bock
Eric.Bock@nih.gov

Dana Talesnik
Dana.Talesnik@nih.gov

Belle Waring
Belle.Waring@nih.gov

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NIH...Turning Discovery Into Health

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briefs

2014 Green Champion Nominations Now Open

All employees are welcome to nominate a colleague, group, organization or even themselves for a 2014 HHS Green Champion Award. Nominations can be submitted in one of 10 categories and will recognize excellence and innovation by HHS employees for their FY 2014 sustainability efforts in these categories: good neighbor; change agents; corporate responsibility; electronic stewardship and data centers; environmental stewardship; energy/fleet management; green hero video outreach; sustainable acquisitions; sustainable design and facilities and regional planning; and water use efficiency and management.

Due to HHS by Jan. 23, nominations can be submitted online at <https://docs.google.com/document/d/1SaFvKzmT1PRpi82dES49GZ4TYRUWkMOcjZmzMQ8S1qA/pub>.

Credit Union Marks Diamond Anniversary

This year, the NIH Federal Credit Union marks 75 years of continuous operation. On Jan. 11, 1940, when nine federal employees pooled \$75 and began transacting business out of a shoebox, NIHFCU was born. From a cramped 5'x6' space in Bldg. 1 (shared with the NIH telephone operator) to today's advanced mobile banking solutions, NIHFCU has enjoyed a fascinating history.

Today, as the nation's largest credit union serving the biomedical industry, NIHFCU thanks all its members—past and present—for their loyalty and contributions to the credit union's longevity and success.

"The 75-year evolution of the NIHFCU from its humble beginnings is truly remarkable," said Rick Wieczorek, NIHFCU president and CEO. "This credit union's ability to grow through the vast social, regulatory and economic changes over the decades is a tribute to all those who have touched the NIHFCU in some way over the years. This includes our volunteer and passionate board and committee members and dedicated employees. And, of course, we are most grateful to our loyal membership who continue to provide us with the privilege of serving their financial needs."

Throughout 2015, NIHFCU will announce special ways to celebrate its diamond anniversary with you. NIHFCU members (and non-members) are invited to visit the credit union's anniversary web page—nihfcu.org/75—for news and announcements.

- Step back in time to view archived NIHFCU photos, stories and news clips (many from archived editions of the NIH Record)

- Share your special NIHFCU story
- Learn about Diamond Anniversary promotions.



NIDA Hosts Mini-Convention, Presents Award

NIDA recently hosted its annual 1-day mini-convention *Frontiers in Addiction Research*, a satellite event of the Society for Neuroscience annual meeting. NIDA-supported scientists from around the world presented recent findings and discussed future directions in neuroscience and addiction research. Event highlights included advances in imaging technologies; drug use and brain toxicity; and the therapeutic potential of RNA. NIDA director Dr. Nora Volkow (c) also introduced Dr. Paul Phillips (l), the 2014 winner of the Jacob P. Waletzky Award, which recognizes scientists for innovative research on substance use or addiction. At right is 2013 winner Dr. Rita Goldstein.



NIDA Grantee Trains Tijuana Police Officers

NIDA grantee Dr. Steffanie Strathdee (second from r) of the University of California San Diego School of Medicine recently attended the graduation ceremony of the Tijuana, Mexico, police officers she trained in public health and safety education with respect to drug abuse-related HIV prevention. The pilot education program taught police how to manage drug-using offenders humanely and safely, including safe management of needles and other drug paraphernalia, as well as promoting referral to treatment for offenders suffering from drug addiction. Tijuana's police chief publicly thanked Strathdee and her colleagues. Also on hand at the graduation were (from l) Teresita Rocha, Dr. Efraim Patino, Dr. Thomas Patterson, Jaime Arredondo and Ofcr. Tellez Gonzalez.

NCCIH Straus Lecture Set, Jan. 26

The National Center for Complementary and Integrative Health will hold the sixth annual Stephen E. Straus Distinguished Lecture in the Science of Complementary Health Therapies on Jan. 26 at 10 a.m. in Masur Auditorium, Bldg. 10. Speakers Dr. Jerome Groopman, Dina and Raphael Recanati chair of medicine at Harvard Medical School and chief of experimental medicine at Beth Israel Deaconess Medical Center, and Dr. Pamela Hartzband, assistant professor of medicine at Harvard Medical School and attending physician in the division of endocrinology at Beth Israel, will present “When Experts Disagree: The Art of Medical Decision-Making.”

The husband-and-wife team will present a new way to make the best medical decisions. They reveal that each of us has a “medical mind,” a highly individual approach to weighing the risks and benefits of treatment. To reveal our unique medical minds, they will present probing questions. Are you a minimalist or a maximalist, a believer or a doubter, do you look for natural healing or the latest technology?

Groopman and Hartzband explain how pitfalls in thinking and the way statistics are presented in pharmaceutical advertisements, the news media and even scientific reports can mislead all of us. The talk will demonstrate the contrast between the role of population guidelines with the care of the individual and explain the complexities of end-of-life care—all factors that contribute to a person’s “medical mind.”

Groopman’s research interests include studying how viruses cause immune deficiency and cancer, the role of endocannabinoids in hematopoiesis, mechanisms of liver injury due to hepatitis C and the effects of novel cell cycle inhibitors against mantle cell lymphoma. He has been integral in developing many AIDS-related therapies. Hartzband’s clinical interests include thyroid disorders, adrenal and pituitary disorders, osteoporosis and calcium disorders. Together, they co-authored the book *How Doctors Think* and write a monthly column for the American College of Physicians’ publication *ACP Internist*.

The lecture series was established in honor of Straus, founding director of NCCAM (predecessor of NCCIH) and an internationally recognized clinician-scientist. Under his leadership, research on complementary health therapies grew threefold.

All are invited to attend the lecture. It will also be videocast at <http://videocast.nih.gov>.



Actress Diaz Visits NIH for Book Research

On Dec. 12, Cameron Diaz (l), actress and author of *The Body Book*, visited NIH with the book’s co-author Sandra Bark (r). Diaz and Bark are conducting research for a second book about healthy aging and toured numerous laboratories at NIH to learn more about research on aging and women’s health. During a day-long visit, the authors met with NIH director Dr. Francis Collins as well as experts from the National Institute on Aging, Office of Research on Women’s Health, Clinical Center, National Institute of Diabetes and Digestive and Kidney Diseases and the Vaccine Research Center of the National Institute of Allergy and Infectious Diseases. Above, the authors meet with Dr. Susan Resnick, chief of NIA’s Laboratory of Behavioral Neuroscience, to discuss findings from the Women’s Health Initiative Memory Study. Below, they are accompanied by NIA director Dr. Richard Hodes (second from r), Dr. Luigi Ferrucci (l), NIA scientific director, and Dr. Felipe Sierra, director of NIA’s Division of Aging Biology.

PHOTOS: LYDIA POLIMENI





JAPAN

CONTINUED FROM PAGE 1

Above, l: Attending the NIH-Japan symposium poster session were (from l) Dr. Marian Young, research biologist, NIDCR; Masaki Ishikawa, research fellow, NIDCR; Connie Lerma, postbac, NHLBI; and Dr. Kenneth Yamada, NIH distinguished investigator and head, cell biology section, NIDCR.

Above, r: Dr. Shinichi Kuriyama of Tohoku University discusses the mental health effects of disasters.

PHOTOS: ERNIE BRANSON

tigators arrived on the scene to help assess radiation levels; NIH continues to assist with recovery efforts. Recently, researchers from Japan and NIH gave a health assessment update, part of a 2-day NIH-Japan symposium co-sponsored by the Japan Society for the Promotion of Science.

Researchers in Japan are conducting health surveys among adults and children to gauge the health consequences, though it will take more time to unravel the longer-term health effects. Similar past public health disasters have resulted in a host of health problems from anxiety and depression to cardiovascular problems, cancer and other diseases.

Preliminary survey results in Miyagi and Iwate districts show elevated stress and anxiety levels in the coastal areas, said Dr. Shinichi Kuriyama, a researcher and professor of disaster public health and molecular epidemiology at Tohoku University, in the hard-hit city of Sendai. Interestingly, suicide rates decreased for about 18 months but then began to climb.

"We think the decreased suicide rates after the disaster could be attributed to intensive mental health activities and these phenomena," he said, adding that it's important to continue to monitor and treat mental health issues in tsunami-stricken areas.

Child health studies have revealed significantly higher stress levels, said Kuriyama. A study of children who were in nursery school during the disaster revealed a significant increase in children who are now overweight as well as increased asthma cases among girls. Tohoku University is collecting data to further study increased risk for ADHD, asthma, autism, eczema, low birth weight and pregnancy hypertension.

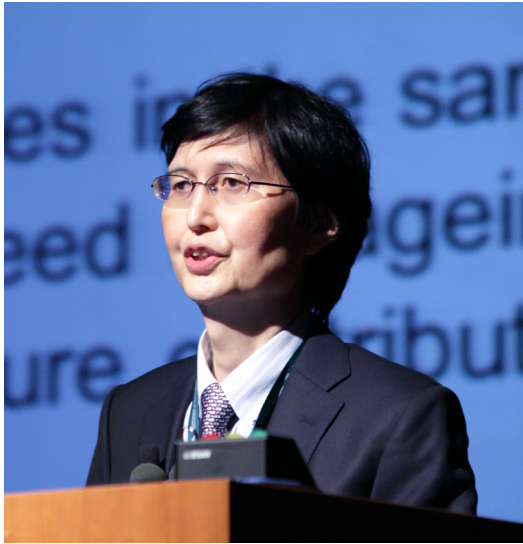
"Diseases might increase in the affected areas," said Kuriyama. "Continuous monitoring and medical support are needed."

Natural disasters and industrial accidents have some unique health consequences that vary depending on the type of disaster, socio-economic conditions and cultural factors. But public health disasters also have shared characteristics, said Dr. Michael Gottesman, NIH deputy director for intramural research. "There's social disruption from public health catastrophes, the effect of stress on the survivors and the need to learn from the experience to mitigate the effects of similar disasters in the future."

Studies are also under way to assess the health effects from the Fukushima nuclear accident. When 46-foot-high tsunami waves crashed over the nuclear plant's seawall, flooding caused a power failure. Control instruments failed, cooling systems stopped and emergency generators flooded and failed, causing a meltdown of 3 of its 6 nuclear reactors. Radioactive materials spewed into the air and ground, contaminating food and water across the country. Tokyo's tap water was tainted with cesium-137 and iodine-131 for weeks, said Dr. Yoshio Hosoi, a professor of radiation biology at Tohoku University.

Some experts are drawing comparisons between this accident and the 1986 Chernobyl accident in Ukraine as they anticipate health outcomes. The amount of I-131 released into the environment following the Fukushima meltdown was 1/10th that of Chernobyl, said Hosoi. The lower radiation release and faster countermeasures helped mitigate the scope of the Fukushima disaster, said Dr. Kiyohiko Mabuchi, deputy chief of NCI's Radiation Epidemiology Branch. Although the radioactive release at Fukushima was significant, I-131 has a short half-life of 8 days and evacuation efforts in the Fukushima plant's surrounding areas were much faster than in and around Chernobyl.

Still, an elevated risk of cancer persists in Japan. Hosoi said studies show thyroid cysts and nodules increased in children from 2011-



Dr. Yoshio Hosoi of Tohoku University

2013 at a higher rate than expected. He said, "In Chernobyl, there was a close relationship between thyroid nodules and thyroid cancer, so the same is likely to occur in Japan."

In Ukraine, NCI studied the protracted radiation exposure among plant cleanup workers over a 20-year period, said Mabuchi. Results, which were verified by an international panel of hematologists, showed a significant increase in leukemia cases among workers exposed to nuclear radiation, he said. A study of Fukushima plant workers is under way, although the projected risk is lower, limited to a smaller number of emergency crews. Mabuchi said additional epidemiological data and assessments are needed.

In response to the 2011 catastrophe in Japan, Tohoku University has established a program in disaster medicine, the International Research Institute of Disaster Science.

"NIH is no stranger to the management of disaster research as well," said Gottesman, "with NIEHS dealing with Katrina and the Gulf oil spill, NCI dealing with radioactivity and NIAID and the Clinical Center with infectious diseases such as SARS and Ebola. There's a natural affinity for our two academic communities to work together. I look forward to continuing to share experiences so we can all learn how best to respond to public health emergencies and mitigate their health effects." 🗨️

Celebrate National Wear Red Day, Feb. 6

Join the National Heart, Lung, and Blood Institute in celebrating National Wear Red Day on Friday, Feb. 6.

To make women more aware of the danger of heart disease and to provide tools to help them take action against heart disease risk factors, NHLBI has for 12 years sponsored a national program called The Heart Truth, in partnership with many national and community organizations. Here's how you can get involved:

❑ Use The Heart Truth's online National Wear Red Day Toolkit to help raise awareness about heart disease and its risk factors by planning a celebration at work. Host a "brown bag" or "red bag" lunch at your workplace, using The Heart Truth speaker's kit and community video featuring real women affected by heart disease.



A couple enjoys exercising together.

❑ Wear red on Feb. 6 to show support for the women in your life by calling attention to the importance of taking care of your heart health.

❑ Post your photos and celebration stories on The Heart Truth's Facebook page at <https://www.facebook.com/hearttruth>.

❑ Participate in The Heart Truth's Twitter chat at <https://twitter.com/TheHeartTruth> on Feb. 6.

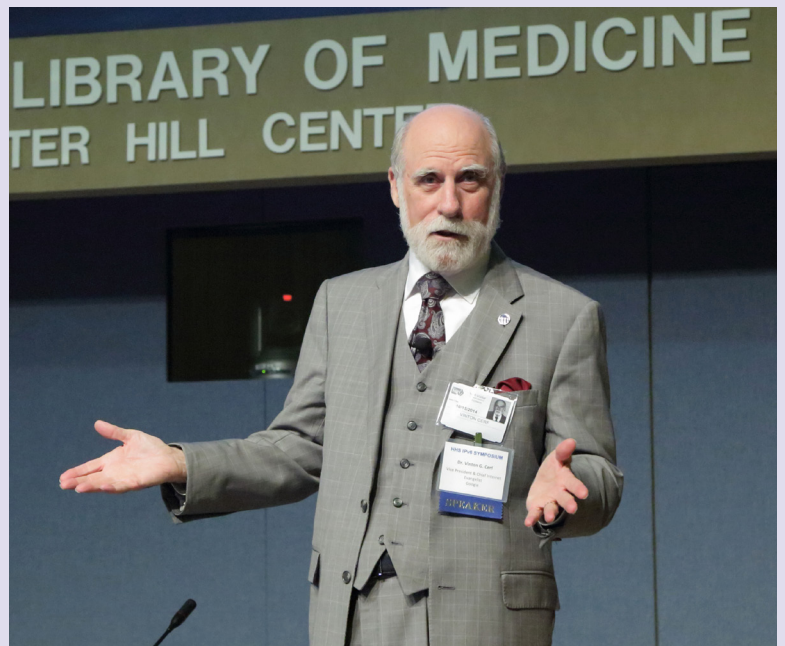
It's not too late to make it part of your new year's resolution. Take action to protect your heart in 2015 by lowering your risk factors for heart disease. Risk factors include high blood cholesterol, high blood pressure, diabetes, overweight and obesity, smoking, lack of physical activity, unhealthy diet, stress, age, gender and family history. Learn more about how to lower your risk of heart disease on The Heart Truth's web site at www.hearttruth.gov. See your health care provider for a thorough check up to find out your personal risk for heart disease. Ask questions about your risk such as:

- ❑ What is my risk for heart disease?
- ❑ What is my blood pressure? What does it mean? And what do I need to do about it?
- ❑ What are my cholesterol numbers? What do they mean for me? And what do I need to do about it?
- ❑ How much physical activity do I need to help protect my heart?
- ❑ What's a heart healthy eating plan for me?
- ❑ How can I tell if I may be having a heart attack? If I think I'm having one, what should I do?
- ❑ What can you do to help me quit smoking or limit my exposure to second-hand smoke?
- ❑ What is my BMI (body mass index)? Do I need to lose weight for my health?

Set realistic, specific goals for a heart healthy lifestyle and act on your goals. In most cases, that means following a heart healthy eating plan, getting regular physical activity, maintaining a healthy weight and not smoking.

Cerf's own home features a wireless home climate monitoring system, which, among other things, helps maintain his wine cellar.

PHOTOS: ERNIE BRANSON



CERF

CONTINUED FROM PAGE 1

An engaging speaker, Cerf, now a vice president at Google, recalled off-hand how he and Bob Kahn, co-inventors of TCP-IP (transmission control protocol and Internet protocol), participated in the building of ARPANET, starting in 1968. "In 1973, after the ARPANET was running, we started work on the design of a multi-network 'Internet.' We mused about how many terminations might be needed for a network of networks we would eventually call the Internet.

"We guessed there were about 128 countries in the world, so that meant two networks would be needed," he recalled. "We figured there were about 16 million computers and 4.3 billion terminations...In 1989, our experiment got loose and became commercially available."

Cerf said that in 1992, "panic mode set in" as Internet architects realized that 128 bits (3.4×10 to the 38th power) of address space might not be enough. Work on IP version 5, designed to accommodate the bandwidth needed to support video, was set aside in favor of IPv6, which became one of the standard protocols 19 years ago.

"Not all Internet service providers have turned on 6, but virtually all of our phones and computers are ready for it," said Cerf, who advised consumers to call up their ISPs and ask when they plan to make IPv6 available. "If they don't hear from you, they won't do anything." Much of the world still runs on IPv4, he said; all Google products run on both versions.

Cerf said that by early 2015, most regional Internet registries will run out of IPv4 address space, forcing adoption of v6 by networks needing address space for expansion. He also said

that the "Internet of things," when even lightbulbs will have their own IP addresses, demands a roomier protocol.

"Half a million networks make up the Internet today," he said. "All operate independently of one another, but they share a protocol. This is a big tent, operationally and financially."

Cerf said it has become almost casual to add devices to the net. "There are increasing numbers of networked appliances—TVs, tablets, mobiles, sensor systems, medical instruments, remotely controlled devices, picture frames, Google Glass, automobiles [think GM's OnStar system]. Even refrigerators are part of the Internet now. I never anticipated that."

There are Internet-enabled bathroom scales that will send your weight to the doctor, for inclusion in your medical record, Cerf said; Philips makes a lightbulb called the Hue that has an Internet connection.

"There are Internet-enabled surfboards available," he continued, giving new meaning to the phrase "surfing the web."

"I'm convinced that sensor networks will be everywhere," he added, noting that Google has purchased the company Nest, which makes Internet-enabled thermostats. Cerf's own home features a wireless home climate monitoring system, which, among other things, helps maintain his wine cellar. A company called SteadyServ offers IPv6-enabled sensors that monitor the weight of beer barrels, to keep suds flowing in bars.

Medical applications include a glucose monitor embedded in a contact lens, which chemically samples tears in diabetic patients; the monitor

could potentially connect to an implanted insulin pump, Cerf said.

“Google Glass has been used already in the operating room,” he added. A \$10 million X Prize is available to whoever can invent a portable device for noninvasive patient exams.

“The Internet of things opens up the possibility of continuous monitoring,” said Cerf, citing the FitBit exercise band that many people have adopted to monitor their physical activity. “You could track people’s vital signs no matter where they are. That would give a better baseline of what is normal for you.”

An app that takes your temperature would be useful in the current Ebola crisis, he said. “That kind of correlation could be very important. These are the sorts of aspirations that people have.”

Cerf went on to prove his bona fides as Google’s “chief Internet evangelist” by enumerating how the Internet can confer “smartness” on everything from cities to cars (self-driven) to houses and from the water and gas supply to the electrical power grid. “We can go from smart cities to smart continents, maybe even a smart world,” he said.

“There are a lot more ‘things’ than people,” he added, which is why the world needs IPv6 vs. IPv4. “We estimate that there will be 50 billion devices on the net by the end of the decade.”

The only down note Cerf sounded is the problem of preserving digital information over long periods of time; what will a DVD disk mean to someone in the year 3000? For that matter, what does a VHS tape mean to a modern teenager?

Cerf says his next big project is archival—to know what floppy disks were for, we will need to preserve the operating system, the apps and the hardware. Otherwise the data bits lack context, even if they survive the eons.

Meanwhile, IPv6 is where we need to go, he urged. “It’s a more efficient format to interpret and a friendlier formula,” Cerf said. “We’ll have a more fragmented and brittle Internet if it is not adopted. The value is connectivity.” ●



NCI’s Chambers Named Deputy Director, Implementation Science

Dr. David Chambers has been named deputy director, implementation science, in the Division of Cancer Control and Population Sciences at the National Cancer Institute. He will provide national scientific leadership on numerous research projects to close the gap between research discovery and program delivery in public health, clinical practice and health policy. He will also be responsible for guiding some of NCI’s flagship research dissemination tools such as Cancer Control P.L.A.N.E.T, Research to

Reality, *Cancer Trends Progress Report* and State Cancer Profiles.

“David is highly regarded among his colleagues, in large part because of his understanding of both the challenges and the opportunities in the field at present,” says Dr. Robert Croyle, DCCPS director. “He possesses a sound and broad knowledge base to increase the uptake of scientifically based efforts in cancer prevention and control across diverse community settings. In addition, he has experience in developing and sustaining key strategic partnerships, community engagement and information technologies to enhance capacity for implementation research.”

Chambers earned his D.Phil. and M.Sc. degrees in management research from the University of Oxford, where his master’s and doctoral work involved studying one of the first broad-based efforts to implement evidence-based medicine—the Promoting Action Toward Clinical Excellence. Prior to joining DCCPS, he spent the past 13 years at the National Institute of Mental Health, working to advance mental health services research and, more specifically, dissemination and implementation research within the institute and across NIH.



Wildin Named Chief of Genomic Healthcare Branch

Dr. Robert Wildin, a clinical geneticist with nearly three decades of experience in private and hospital-based medical practice, joined the National Human Genome Research Institute recently as chief of the Genomic Healthcare Branch. He will provide leadership for activities to promote the integration of genomic discoveries into day-to-day clinical and public health practice.

“Dr. Wildin’s background and expertise are particularly well suited for leading the programs within NHGRI’s Genomic Healthcare Branch,” said Dr. Laura Lyman Rodriguez, director of the Division of Policy, Communications and Education. “At a time when opportunities are increasing for health care professionals to consider and use genomic information in their care delivery, Dr. Wildin will be able to draw upon his years on the front lines of medical practice in various community and underserved settings to target NHGRI activities to those stakeholders and initiatives most in need.”

Wildin received his bachelor’s degree from Massachusetts Institute of Technology and his M.D. from the University of California, San Francisco. He completed a pediatrics residency, a medical genetics fellowship and a postdoctoral fellowship in immunology at the University of Washington.

He has served on the medical faculty of teaching hospitals in Seattle, Galveston and Portland, Ore. He was medical director for a clinical molecular diagnostic laboratory and, for several of the past 10 years, the sole general clinical genetics provider for two large community hospital systems in Boise and Portland. He also established a biomedical informatics software and consulting business.



POSTERS

CONTINUED FROM PAGE 1

Above:

The new posters can be found on Bldg. 1's second and third floors and feature the accomplishments of NIH's institutes, centers and offices.

PHOTOS: BILL BRANSON

tions and Public Liaison and Dr. Robin Kawazoe of OD's Division of Program Coordination, Planning and Strategic Initiatives to beautify Bldg. 1—on a minimal budget. Pelis suggested that they ask each IC for a framed poster. Kawazoe recommended asking OD offices too.

Pelis' plan was to create a museum-style exhibit that would reflect the breadth of NIH's contributions to research, medicine and health.

"Every poster represents something unique about each contributing institute, center or office. As a collection, they tell the story of NIH—who we are; what we do," said Hudson.

John Burklow, NIH associate director for communications and public liaison, then asked the communication directors from each IC to submit one poster that represented an aspect of their identity. He also noted that each poster must speak for itself because there would be no captions.

Over the summer, Pelis received almost three dozen posters representing most of the ICs and several OD offices. Around the same time, the Stetten Museum's exhibition content developer Hank Grasso offered to help arrange the exhibit.

Grasso chose locations for each poster. Where possible, he placed them near Bldg. 1 offices linked in some way to the IC or program featured in each poster. In the absence of such links to the featured research, other visual design criteria took precedence, including color, illustration/typographic/organizational style or size. He also sought to balance the content by interspersing clinical or behavioral posters with basic science posters.

Grasso also observed that the posters communicate important issues in health and science and increase public awareness of NIH's contributions to research and medicine. He acknowledged that it's not possible to represent the full

array of contributions made by any one of the institutes or centers with a single poster.

"It is this conundrum that helps to illustrate NIH's embarrassment of riches—each and every day, extraordinary findings here alter the landscape of scientific research," Grasso said. "It would be easy to dismiss any installation of posters as a 'wall decoration' of little critical importance. However, with the installation of this collection of posters, few visitors to Bldg. 1 will emerge without a greater sense of the array of accomplishments that may be attributed to NIH's ICs."

Pelis noted that the ICs will periodically be given an opportunity to change their posters.—

Eric Bock

Willis Joins NIGMS Genetics Division

Dr. Kristine Willis is the new program director in the NIGMS Division of Genetics and Developmental Biology, where she oversees research grants in the areas of DNA repair and mutagenesis. Willis was formerly an assistant research professor in the department of biology at Georgetown University. She earned both a B.S. and Ph.D. in biology from the University of Southern Mississippi and conducted postdoctoral research on genomic-level cell growth and division at the University of Toronto.



milestones

McNicol Retires After 25 Years at NEI

By Robin Latham

While some people leaving a leadership position hand over piles of folders and lists of contacts, Dr. Loré Anne McNicol, who retired recently after 25 years at NEI (the last 15 as director of the Division of Extramural Research), handed over a Native American “talking stick” to Dr. Michael Steinmetz, who serves as acting DER director.

The gesture was a reflection of what McNicol’s colleagues will tell you was an exceptionally open and inclusive way of managing her division and the people who worked in it. “She had an open door policy,” said Don Everett, a program officer in DER. “Anyone here felt comfortable going into her office at any time. And they did.”

In later years, McNicol made a weekly meeting open to everyone in DER. “She included everyone—from interns to program directors—because this way she would only have to explain something once and everyone heard the same thing,” said Dr. Ellen Liberman, extramural policy officer in DER. “She’d tell us everything. She didn’t believe in secrets.”

Hence the talking stick.

“As much as I tried to tightly structure the meetings,” said McNicol, “certain things would always happen. People would talk over each other or several different conversations would be going on at the same time. I grew up in northern Montana and I knew about the talking stick the Blackfoot Indians used at their tribal councils. You could only speak if you were holding the stick. It had to be passed from one person to the next. So I thought this might be helpful to Mike going forward.”

McNicol earned her Ph.D. in medical sciences from Boston University School of Medicine and focused on infectious diseases during postdoctoral work at the University of Pennsylvania School of Medicine. After holding several faculty positions, and discovering she wanted a career that was primarily research-oriented, she joined NIH as a World Health Organization fellow in the malaria unit of NIAID. Although the focus on research was intellectually gratifying, the tug between laboratory and family obligations gave her little control over her time. When a posi-



tion as a program director opened up at NIGMS, McNicol applied, secured the job and found that science administration was much to her liking. In 1989, she joined NEI as corneal diseases program officer and then took on the DER director’s job in 1999.

One of the first things McNicol put into place were administrative supplement grants to support state-of-the-art instrumentation in the vision community. “I felt the lack of up-to-date technology was holding the field back,” she said. “Advances would only happen if the vision community had the tools they needed to do high-end computation.” These grants put expensive suites of equipment into the hands of vision researchers and their colleagues.

“I’ve always said that instrumentation is the gift that keeps on giving,” said McNicol. “If it’s in a department, everyone can use it. And it encourages collaboration.”

Under NEI policies, grantees could also look to end-of-year funding to support their equipment needs. Over time, grantees got to know this policy, said Liberman. “They would send us requests throughout the year that we’d hold onto until August. It was like a wish list. It was good stewardship of funds, when funds were very tight.”

McNicol’s achievements were recognized in 2011 by the Carl Kupfer Visionary Award—NEI’s highest honor—and by the Meritorious Executive Rank Award in 2007, a special recognition for exceptionally strong leaders in public service that is given to few across government.

“The extramural division of NEI thrived under Loré Anne’s leadership,” said NEI director Dr. Paul Sieving. “She was an expert on scientific review, funding mechanisms, budget, government regulations and program management. Opportunities for vision research prospered during her time.”

In retirement, there will be more science, although in archeological, rather than biomedical, research. “I’ve been studying the ancient Egyptian language for most of my life,” said McNicol. “I planned to travel to Egypt to participate as a volunteer in a dig. But currently, western airlines won’t fly to Cairo because of the unrest in the area. I hope to volunteer for an Oxford University museum project transcribing papyri.” A trip to Antarctica will tick off another item on McNicol’s bucket list.



NIDA Mourns Death of IRP’s Goldberg

Dr. Steven Goldberg, chief of the pre-clinical pharmacology section in NIDA’s intramural research program, died on Nov. 25 at age 73.

In 1979, he joined the Addiction Research Center (currently housed within NIDA) and, over the last several decades, he made outstanding contributions to the understanding of the behavioral and neuropharmacological mechanisms triggered by drugs of abuse. Goldberg collaborated extensively with many U.S. and European labs and published more than 370 empirical papers, reviews and book chapters. He and his group developed many experimental procedures and identified various neuropharmacological mechanisms of drug reward and relapse that laboratories around the world have capitalized upon.

Goldberg was a visiting professor and adjunct faculty at Johns Hopkins University, Georgetown University, the University of Maryland and the University of Cagliari in Italy.

Beyond his outstanding scientific achievements, Goldberg is remembered by his colleagues and friends “as an exceptionally generous and honest person, an excellent mentor and role model to his trainees and a fantastic collaborator.” He is survived by his wife and two children. 12

Chronic High Blood Sugar May Be Detrimental To the Developing Brain of Young Children

Young children who have long-term high blood sugar levels are more likely to have slower brain growth, according to researchers at centers including NIH.

Researchers did not find significant cognitive differences between the healthy children and those with type 1 diabetes, but they believe a continuing study with the same groups of children may show changes there as well.

The findings could lead to a major shift in the way children with type 1 diabetes are treated, said Dr. Karen Winer, a coauthor of the study and a pediatric endocrinologist at NICHD, which co-funded the 18-month study. The findings were published in the journal *Diabetes*.

"We found that chronic high blood sugar may be detrimental to the developing brain of young children," Winer said.

"We have never linked this before to brain structure in a young child."

Stem Cell Transplants May Halt Progression Of Multiple Sclerosis

Three-year outcomes from an ongoing clinical trial suggest that high-dose immunosuppressive therapy followed by transplantation of a person's own blood-forming stem cells may induce sustained remission in some people with relapsing-remitting multiple sclerosis (RRMS). RRMS is the most common form of MS, a progressive autoimmune disease in which the immune system attacks the brain and spinal cord. The trial is funded by the National Institute of Allergy and Infectious Diseases and conducted by the NIAID-funded Immune Tolerance Network.

Three years after the treatment, called high-dose immunosuppressive therapy and autologous hematopoietic cell transplant or HDIT/

HCT, nearly 80 percent of trial participants had survived without experiencing an increase in disability, a relapse of MS symptoms or new brain lesions. Investigators observed few serious early complications or unexpected side effects, although many participants experienced expected side effects of high-dose immunosuppression, including infections and gastrointestinal problems. The 3-year findings were published in the Dec. 29 online issue of *JAMA Neurology*.

"These promising results support the need for future studies to further evaluate the benefits and risks of HDIT/HCT and directly compare this treatment strategy to current MS therapies," said NIAID director Dr. Anthony Fauci. "If the findings from this study are confirmed, HDIT/HCT may become a potential therapeutic option for people with this often-debilitating disease, particularly those who have not been helped by standard treatments."

Study Finds Genetic Clue to Menopause-like Condition in Young Women

Six young women with a disorder that mimics menopause have gene alterations that hamper the repair of damaged DNA, report researchers supported by NIH. The mutations, occurring in women with primary ovarian insufficiency (POI), are in genes that repair damaged DNA in cells of the ovary that eventually become egg cells. The findings may contribute to an understanding of POI and to the genetic basis of the precise timing of menopause that occurs at the usual stage in a woman's life.

With POI, a woman's ovaries stop working normally before she is 40 years old—sometimes as early as her teens. The disorder is thought to affect about 1 percent of women of reproductive age in the United States. Along with reduced fertility, women with POI are also at high risk for osteoporosis and heart disease.

The genetic alterations that the researchers discovered in this group of patients belong to a family of genes known to help repair damaged DNA in egg cells—the minichromosome maintenance family.

"These studies are the first to link POI to an inability to repair breaks in the DNA," said Dr. Susan Taymans of the Fertility and Infertility Branch, NICHD, which funded the work.

The studies appeared in the *Journal of Clinical Investigation* and in the *American Journal of Human Genetics*.



Young children who have long-term high blood sugar levels are more likely to have slower brain growth, according to researchers supported by NIH.

feedback

Have a question about some aspect of working at NIH? You can post anonymous queries at www.nih.gov/nihrecord/index.htm (click on the Feedback icon) and we'll try to provide answers.

Feedback: What is the NIH policy on the use of e-cigarettes on campus? The other day I saw someone using an e-cig while walking on campus and he had an air about him that just dared someone to challenge him. My lungs and health really appreciate a tobacco/smoke-free campus.



Response from the Office of Research Services: NIH and HHS policies both prohibit the use of e-cigarettes on the NIH campus.

The NIH Manual Issuance 1321 "Tobacco-Free NIH" stipulates that tobacco of any kind is not allowed on campus. Per the manual issuance, the definition of tobacco is "any tobacco product (including cigarettes, cigars, pipes, smokeless tobacco, other tobacco products and e-cigarettes)."

In July 2011, HHS expanded the smoke-free policy "...by prohibiting the use of any tobacco products at all of its facilities under direct HHS control—within buildings as well as in outdoor spaces, parking lots, private vehicles on the premises and government vehicles—regardless of location. The tobacco-free policy covers cigarettes, cigars, pipes, smokeless tobacco, e-cigarettes and all other tobacco combustible and noncombustible products."

Feedback: I've been wondering for a while why the various parking garages on campus have spaces marked specifically for compact or small vehicles but there seems to be no provision for extra-large vehicles. I frequently notice full-sized pickup trucks that stick several feet longer than the vehicles on either side, often with a towing hitch that sticks out even farther but less noticeably. Other large SUVs and vans are wide enough that when one is parked on each side of a standard sedan it is difficult to enter or exit the vehicle because the doors cannot be opened. Additionally it makes exiting the park-

ing space much more dangerous for the sedan due to the lines of sight being completely blocked by these large vehicles. Would it make sense to designate a specific part of the parking garages for these larger vehicles so people in Fiats or smart cars don't take their life in their hands backing out of a space when a full size F-350 and a Hummer park on both sides of it?

Response from ORS: NIH seeks to maximize the available parking on campus in an orderly and consistent manner. Where we cannot fit normal sized vehicles safely, we have designated spaces for compact vehicles, especially around turns or tight fitting areas. This decision was made in an effort to maximize the available space and it was not intended to exclude larger vehicles. Most parking spaces on the NIH campus have been sized to meet industry standards. We appreciate your concern and frustration, yet to give privileged parking to SUVs or vans would create a hardship on non-SUV owners and would not efficiently utilize the available parking at NIH.

Although you described lines of sight as being impacted by large vehicles, the NIH Police reported they have had no related accidents going back 3 years. With approximately 10,000 vehicles a day at NIH and more than 7.5 million cars coming and going over the last 3 years, NIH drivers have demonstrated awareness of caution and safety. As an additional safety precaution, may we suggest turning your headlights on to alert oncoming vehicles before pulling out of a space with limited vision and slowly exit your space until you have a clear sight to proceed accordingly. To maximize safety in our parking garages, we have limited the speed to 5 m.p.h. and we have also placed speed bumps where structurally feasible. 🚗



Role of Disc Degeneration in Pain Explored

NIH-funded basic, translational and clinical researchers recently met with NIAMS leadership and staff to discuss research needs and opportunities related to structural, biomechanical and biochemical changes in the intervertebral disc that can lead to chronic neck and back pain. Part of the institute's scientific planning process, the full-day roundtable addressed topics including the pathological changes that lead to disc degeneration; the development of tools that can distinguish between changes that lead to pain and those that are asymptomatic; and ways in which high-throughput technologies might be used to identify biochemical, imaging and genetic biomarkers of symptomatic disc degeneration and spinal pathology. Participants included NIAMS director Dr. Stephen Katz (front, second from l), deputy director Dr. Robert Carter (front, fourth from l) and staff members Drs. Jim Panagis (back, third from l), Gayle Lester (back, fifth from r), Joan McGowan (front, second from r) and Bernadette Tyree (front, third from r). Dr. Partap Khalsa from NCCIH (back, l) and Dr. Lynda Porter from NINDS (back, second from l) also contributed to the discussion.

Improving Outcomes for High-Risk Infants

NINR Director's Lecture Traces Advancement of Neonatal Care

By Andria Cimino

Dr. Barbara Medoff-Cooper, who is now the Ruth M. Colket professor in pediatric nursing at the University of Pennsylvania School of Nursing, saw some of the first 1,000-gram infants to be born "intact" during the early days of her career as a pediatric nurse practitioner at Children's Hospital of Philadelphia. Their struggle to survive and the struggle of their parents to learn how to care for such fragile newborns inspired her move to research.

At a recent NINR Director's Lecture, "Innovations in High-Risk Infant Care: Creating New Pathways," Medoff-Cooper traced the highlights of a career dedicated to discovering the connections between infant feeding behavior, weight gain and neurodevelopment. She also described key collaborations with colleagues in engineering, psychology, cardiology, pediatrics and other disciplines that led to the development of groundbreaking new research technologies and family-centered interventions.

Noting "there were no MRIs in those days," Medoff-Cooper described how her early experience with nuclear magnetic resonance spectroscopy to study "brain metabolism" in infants with grade 3-4 bleeds led to her hypothesis that feeding behaviors might be seen as an index of neurobehavioral integrity, the topic of her first NINR R01. Her lab became the first to identify the microstructure of nutritive sucking across gestational ages as an indicator of the maturational process.

In later studies, by helping develop ever more sophisticated versions of a nutritive sucking device used to assess feeding behavior (now known as the Neonur) and behavioral measures such as the Early Infancy Temperament Questionnaire, Medoff-Cooper was able to demonstrate that early feeding organization is indeed a significant predictor of developmental outcomes at 12 months.

After these successes, she shifted her focus to a different population: infants born with complex congenital heart defects (CHD). Like medically fragile premature infants, newborns with CHD also have poor feeding behaviors that are linked to poor nutritional intake and weight gain, developmental delays and high parental stress. In addition, these infants are more likely to die between their first cardiac surgery and 4-5 months of age.

Her current study is a randomized controlled trial comparing the health outcomes and cost of care of a telehealth home monitoring intervention to standard post-discharge care. Named REACH, it addresses not only the CHD infants, but also their parents. "We felt strongly that this belonged to nursing, that we needed to think about ways to help these parents deal with the enormous challenge of constant feeding, cleaning of tubes and watching for breathing difficulties in their infants post discharge," Medoff-Cooper said.

Parents in the REACH intervention group receive daily text messages and virtual home visits from an advance pediatric nurse twice a week via Skype or FaceTime. They can also text questions or post videos at any time about changes in their infant's status and receive a timely response that determines whether emergency care is needed. Infants are followed for 4 months or until their second surgery.

Medoff-Cooper expressed her belief that REACH should be state-of-the-art care for every infant leaving the cardiac intensive care unit. "The combination of technology and a comprehensive approach to family-centered support has advanced neonatal care and enables these families to grow to their full potential," she said.

To view the full lecture, visit <https://www.youtube.com/watch?v=33-0mnebT2Y>. The next NINR Director's Lecture will be held on Tuesday, Mar. 3. For more information, visit www.ninr.nih.gov/directorslecture.



NINR director Dr. Patricia Grady (l) greets presenter Dr. Barbara Medoff-Cooper at the NINR Director's Lecture. "Through her leadership in nursing science, Dr. Medoff-Cooper has advanced the field of neonatal care," said Grady. "She has shown tenacity and ingenuity in her effort to build the evidence base linking early feeding behavior to health outcomes for this most vulnerable of populations. Her work gives us an inspirational glimpse of the future, in which mHealth, personalized interventions and self-management in settings other than the hospital will be the gold standard of health care."

Benefits of Physical Activity To Be Explored

Have you ever wondered why physical activity is good for us? Have you ever been confused about how much and what type of exercise(s) you should do? Recently, 15 investigators from across the United States met with NIH staff to discuss ways to stimulate studies that may answer these important public health questions. The Cellular and Molecular Mechanisms of Physical Activity-Induced Benefits Workshop—sponsored by the NIH Common Fund, NIA, NIAMS and NIDDK—focused on tools and resources that could help laboratory and clinical researchers explain how cells throughout the body respond to physical activity and how those changes translate into better physical and mental health. The meeting was part of the Common Fund planning process that explores the needs of the broad scientific community and within NIH. A videocast of the meeting is archived at <http://videocast.nih.gov/summary.asp?Live=14922>.



PHOTO: BILL BRANSON